

Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs

**Dick West, Chair, Committee on Polar
Icebreaker Cost Assessment
July 2017**



Report

- Congressionally requested
 - cost-based study
 - focus on strategies to minimize polar icebreaker acquisition and operation costs

- Report available at:
<http://www.trb.org/Main/Blurbs/176271.aspx>

Committee on Polar Icebreaker Cost Assessment

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- **Carin J. Ashjian**, Woods Hole Oceanographic Institution, Woods Hole, MA
- **Jay P. Carson**, Independent Consultant, El Cajon, CA
- **Roberta R. Marinelli**, Oregon State University, Corvallis
- **R. Keith Michel**, Webb Institute, Glen Cove, NY
- **VADM David P. Pecoske**, U.S. Coast Guard (retired), Potomac, MD
- **David G. St. Amand**, Navigistics Consulting, Boxborough, MA
- **Steven T. Scalzo**, Scalzo Marine Services, LLC, Seattle, WA
- **Eugene A. Van Rynbach**, Herbert Engineering Corporation, Annapolis, MD
- **Mark S. Hutchins**, Transportation Research Board, Washington, DC

Current Fleet

Enhanced maintenance program for Polar Star, extend life through mid-2025



Build 4 Heavy Polar Icebreakers (HPIBs)

- Block buy / common design
 - Reduce acquisition costs
 - Reduce operation and maintenance costs
 - 4th Heavy lower cost than 1st Medium
- 3 for Arctic [1.0 presence], 1 for Antarctic
- Owned and operated by U.S. Coast Guard
 - Less costly than leasing
 - Build icebreaking expertise

Acquisition Strategy

- Block buy contracting
- Complete planning and production detail design before the start of construction
- Report recommends strategies to reduce cost and mitigate risk of cost overruns
 - Utilize all available international technology
 - Maximize COTS and international standards
 - Minimize MIL-SPEC

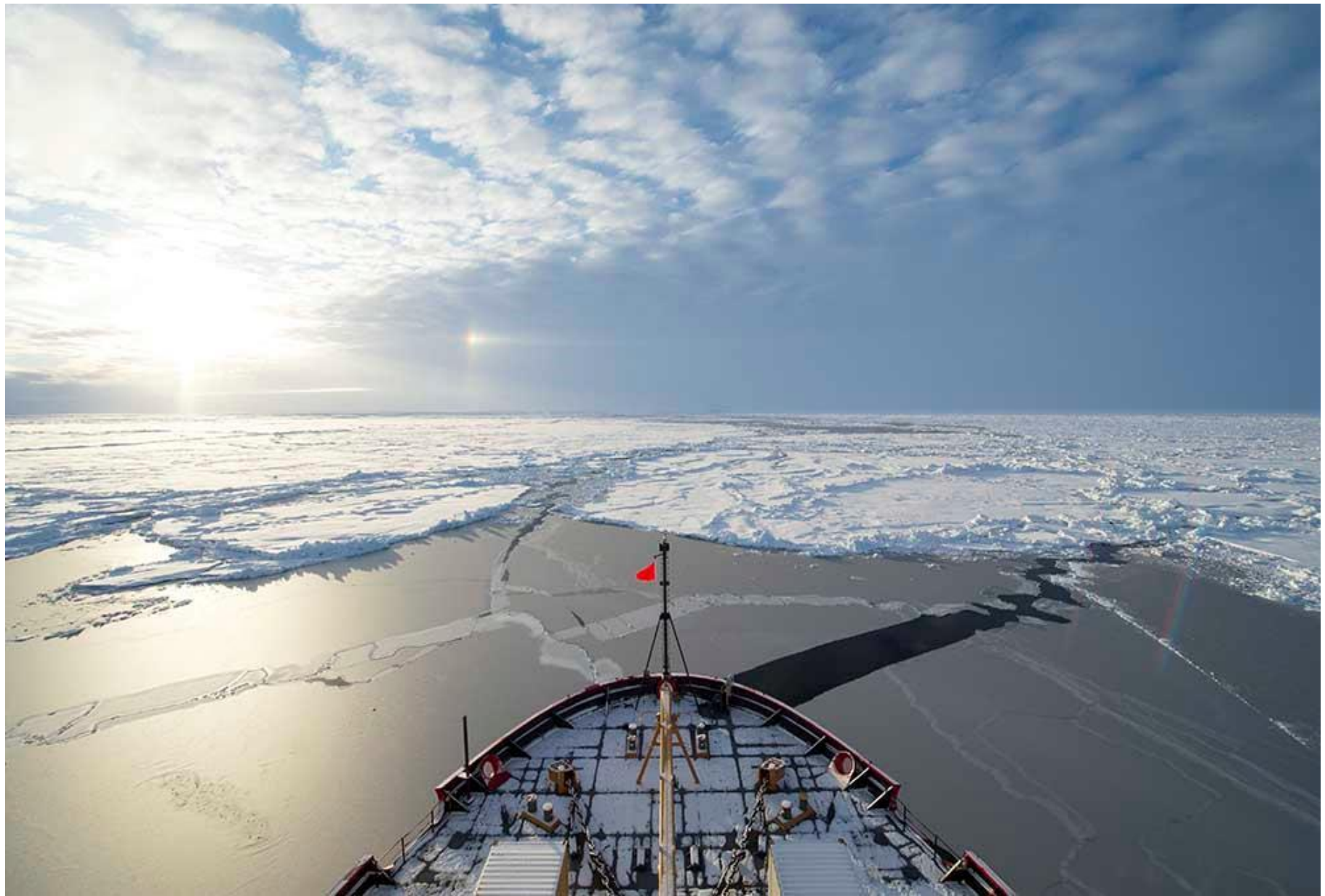
Polar Science

- **‘science ready’ HPIBs**
 - Common design should include ‘space/weight/support’ for future scientific installation
 - More cost effective than later retrofit

- **‘science capable’ HPIB**
 - specific science-related equipment (USCG ORD) installed on ‘science ready’ HPIB

Questions?





Backup Slides: Statement of Task

(a) Cost Assessment

An ad hoc committee shall:

- (1) describe current and emerging requirements for the Coast Guard's polar icebreaking capabilities, taking into account the rapidly changing ice cover in the Arctic environment, national security considerations, and expanding commercial activities in the Arctic and Antarctic, including marine transportation, energy development, fishing, and tourism;
- (2) identify potential design, procurement, leasing, service contracts, crewing, and technology options that could minimize life-cycle costs and optimize efficiency and reliability of Coast Guard polar icebreaker operations in the Arctic and Antarctic; and
- (3) examine:
 - (A) Coast Guard estimates of the procurement and operating costs of a Polar icebreaker capable of carrying out Coast Guard maritime safety, national security, and stewardship responsibilities including:
 - (i) economies of scale that might be achieved for construction of multiple vessels; and
 - (ii) costs of renovating existing polar class icebreakers to operate for a period of no less than 10 years.
 - (B) the incremental cost to augment the design of such an icebreaker for multiuse capabilities for scientific missions;
 - (C) the potential to offset such incremental cost through cost-sharing agreements with other Federal departments and agencies; and
 - (D) United States polar icebreaking capability in comparison with that of other Arctic nations, and with nations that conduct research and other activities in the Arctic.

Tasks, continued

(b) Included Costs: For purposes of subsection (a), the assessment shall include costs incurred by the Federal Government for:

- (1) the lease or operation and maintenance of the vessel or vessels concerned;
- (2) disposal of such vessels at the end of the useful life of the vessels;
- (3) retirement and other benefits for Federal employees who operate such vessels; and
- (4) interest payments assumed to be incurred for Federal capital expenditures.

(c) Assumptions: For purposes of comparing the costs of such alternatives, the Academy shall assume that:

- (1) each vessel under consideration is
 - (A) capable of breaking out McMurdo Station and conducting Coast Guard missions in the Antarctic, and in the United States territory in the Arctic (as that term is defined in section 112 of the Arctic Research and Policy Act of 1984 (15 U.S.C. 4111)); and
 - (B) operated for a period of 30 years;
- (2) the acquisition of services and the operation of each vessel begins on the same date; and
- (3) the periods for conducting Coast Guard missions in the Arctic are of equal lengths.